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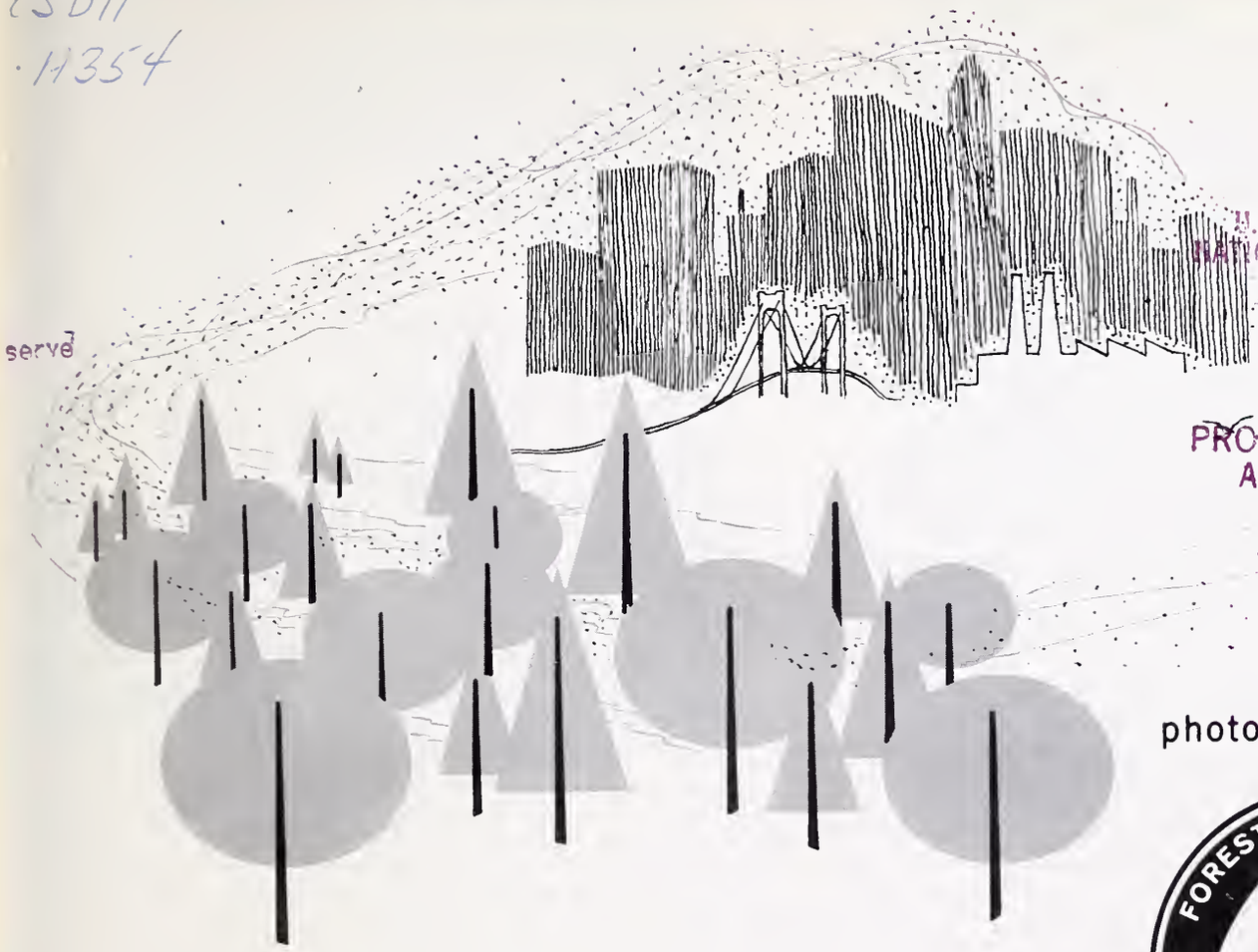

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TREES-- helping to clean our air ???

Give us today our daily breath. And, let it be clean!

Air is our most important natural resource. Without food we could survive perhaps five weeks; without water, possibly five days; but without air, probably less than five minutes.

Still man contaminates his atmospheric environment with the wanton release of wastes from the generation of his energy needs. And, as these contaminants are ejected into the atmosphere and as they exceed the replacement capabilities within the already overladen, dirty airsheds, good air becomes ever more scarce.

An Answer? Trees may be of some help!

This is an initial finding from recent exploratory studies conducted in Steubenville, Ohio by two Forest Service research scientists.

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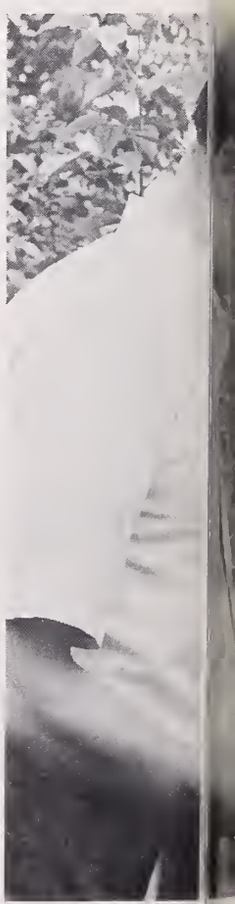
NORTHEASTERN FOREST EXPERIMENT STATION • UPPER DARBY, PENNSYLVANIA 19082

Under a canopy of hardwood trees, suspended particulates are collected and measured in a 24-hour period.

An air pollution sampling device is check
Air is drawn through a filter that catche
lates, and thus provides data for the fo
to evaluate.

Aerial sampling for particulate pollutants is done with the dustfall bucket (lower right) for larger sizes of settling pollutants and with a Hi-Vol sampler for smaller particles, which tend to remain air-borne for indefinite periods. This set-up helps measure dustfall and suspended particles in an open area.



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Pathologist Leon S. Dochinger and Biological Technician Frederick Bender are doing the studies.

Tree plantings cannot completely solve all the problems of aerial pollution, the scientists feel. But trees may substantially help to reduce pollution. For example, forests, woodland glens, roadside parks, and even expressways lined with trees may serve as air purifying agents.

The two researchers believe that trees may decrease dust fall-out through the filtering effect of their leaves; may detoxify the unclean air of phytotoxicants through gaseous absorption; and may also supply fresh oxygen to fume-filled areas.

According to the researchers a large portion of atmospheric pollution consists of solid and liquid particles. Currently, particulate emissions from stationary and mobile sources contribute 35 million tons to the atmosphere every year. These particles consists of salt crystals, heavy metals (lead, cadmium, and zinc), acid dusts, and similar matter. Particulates are usually classified according to their size. Larger particles that settle because of gravitation are classified as dust fall; those that tend to remain airborne for indefinite periods of time are classified as suspended particles.

For years man has observed how trees cleanse the air, but he has remained unaware of how important trees are in this role. One has only to look at the dust coatings on the tree trunks, branches, and foliage along unpaved roads, or the whitish mass of chemical deicers splashed on woody plants during the winter months, or the gritty film of particles on conifer and hardwood trees found near stone quarries and cement kilns to realize the importance of trees. In all instances, tree plantings curbed the movement of particulate matter.

With this knowledge, the Forest Service team did a preliminary search in Steubenville to (1) provide an estimate of the capacity of tree plantings to reduce particulate matter in the atmosphere; and (2) to characterize the ability of tree plantings to cleanse the environment of dustfall and suspended emissions.

Particulate pollutants were surveyed at two sampling stations during the months of March through October, 1971. At each station, analyses were made for dust fall and suspended particles over open terrain, under a canopy of hardwood trees, and under a canopy of conifer trees.

Efficiency of tree plantings as filters for dustfall and suspended particles was constantly examined. Results showed that green canopies did reduce the amount of particulate pollutants in the air, when compared to areas without trees.

Under a canopy of hardwood trees, suspended particulates are collected and measured in a 24-hour period.

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A glass fiber ...ter is inspected for ...nded particulates trap... during a 24-hour period. This filter is inside the ...-Vol sampler.

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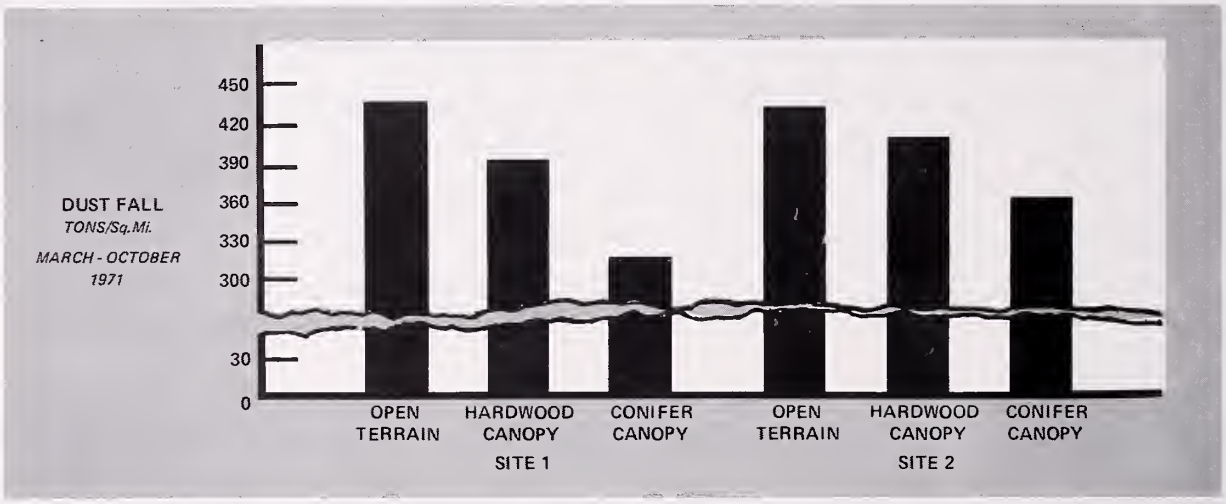
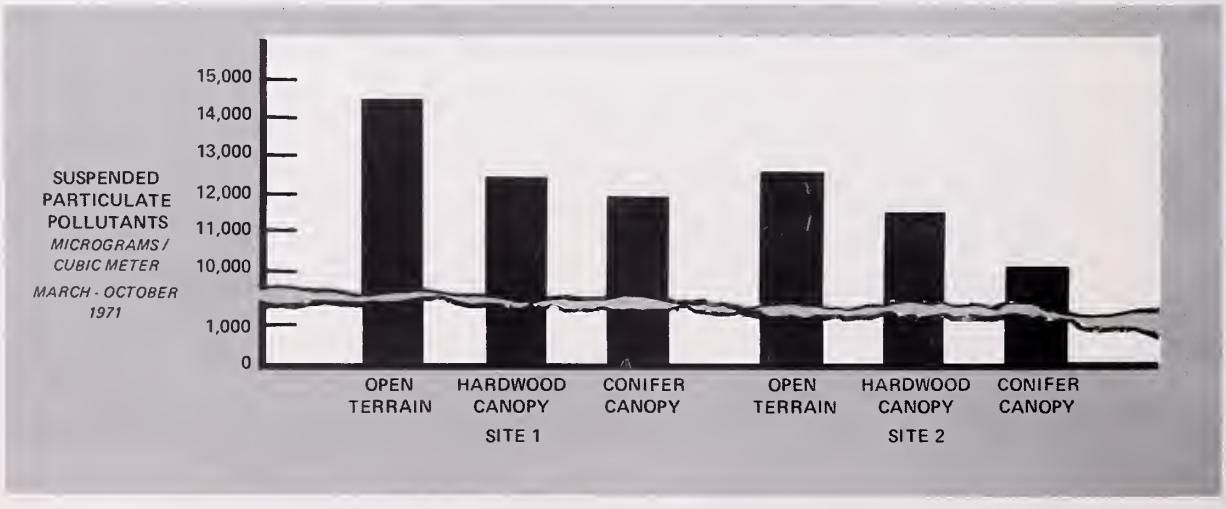
Says Dr. Dochinger, "This initial work has subtantiated our original belief that trees may have a cleansing effect on the atmosphere. Now more in-depth, long-term research is necessary to see how significant an effect tree plantings have along with other variables such as air movement, temperature, season, and pollution sources."

In time, forestry science may come up with a better understanding of the interplay of greenbelts and the total environment, in particular how trees may insure that we have a cleaner air to breathe.

preliminary findings at Steubenville



At two sampling sites in Steubenville, Ohio, dustfall pollutants were assayed in an area void of trees and under a canopy of hardwood and then conifer trees. Dustfall totals from March through October indicate that tree plantings may have the capacity to reduce particulate pollutants. A similar response was obtained at these two sites when samplings were made for suspended particulate pollutants.